

P R O G R E S S
OF
M E D I C A L S C I E N C E .

M E D I C I N E .

UNDER THE CHARGE OF
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On the Occurrence of Lipase in the Urine as a Result of Experimental Pancreatic Disease.—In pancreatic diseases in which fat necroses occur it is generally believed that the latter are due to the action of lipase, the fat-splitting ferment of the pancreatic secretion. It is probable that the ferment reaches the fat cells by various channels. It may become diffused by an exudate throughout the abdominal cavity; it may travel through the areolar tissue, or it may be carried in the lymph and blood currents. The great preponderance of cases in which the necroses are practically limited to the immediate neighborhood of the pancreas or to the subperitoneal fat favors the first two methods. The fact that the fat necroses have been found in the pericardial, subpleural, and subcutaneous fat of the chest and abdomen and in the intermuscular tissue and bone-marrow, suggests very strongly that, in exceptional cases, the ferment is carried in the lymph and blood stream to distant parts of the body.

HEWLETT (*Journal of Medical Research*, May, 1904, p. 377) has carried out a series of experiments on dogs with the view of determining the relation, if any, between experimental disease of the pancreas and the presence of a fat-splitting ferment in the urine. Lesions of the pancreas were produced by injecting various substances into the pancreatic duct, ligaturing the duct, etc. Without going into the details of the writer's method of determining the presence of lipase in the urine, the essential features of the test are as follows: Equal quantities of urine are poured into two flasks. The contents of one flask are boiled to destroy any ferment that may be present. Both urines are neutralized with sodium hydrate. A measured quantity of ethyl butyrate and a little toluene are added to each, the latter to prevent bacterial growth, and the flasks placed in a thermostat at 39° C. for twenty-four hours. The contents of each are then extracted with ether, and the relative acidity of the two ether extracts is determined by titrating with $\frac{N}{20}$ potassium hydrate solution. Any decided dif-

ference between the acidity of the ethereal extracts of the boiled and of the unboiled urine is due to the butyric acid formed by the cleavage of the ethyl butyrate by the lipase, and where the difference in acidity is at all marked the odor of the butyric acid can be easily recognized.

Ten dogs were operated on. At the autopsy, performed at varying periods after the operation, fat necroses were found in eight. In all these a fat-splitting ferment was demonstrated in the urine. The experimental pancreatic lesions in which lipase was found in the urine were acute pancreatitis, acute obstruction of the pancreatic duct, and pancreatic trauma. Hewlett expresses the belief that lipase is present in the urine at some time during the course of most pancreatic diseases which give rise to fat necroses. It was found in greatest amount in experimental acute hemorrhagic pancreatitis. It also occurred from three to five days after obstruction of the pancreatic duct. These are the two conditions in which fat necroses are most apt to occur in human pancreatic disease. Hewlett states that very little, if any, lipase is present in normal urine. It appears, therefore, that the finding of lipase in the urine is of considerable diagnostic importance in determining the existence of pancreatic disease.

A Contribution to the Knowledge of the Purin Bodies of Human Feces in Health and Disease.—WALKER HALL (*Journal of Pathology and Bacteriology*, March, 1904, p. 246) has conducted a series of investigations to determine the quantitative excretion of purin bodies (uric acid plus the xanthin or purin bases) in the feces, to ascertain the absorption quotients of the several purin bases, and to estimate the output of the fecal purins in morbid conditions.

The purin bodies of the feces may arise from (1) desquamation of the columnar epithelium of the alimentary canal; (2) the nucleoproteids of bacteria and leukocytes; (3) the fluids poured into the intestine by its secreting cells and by those of the pancreas. Bile has been shown not to contain any purin bodies. There is no evidence to indicate that either xanthin or uric acid are excreted from the tissues of the body into the intestines. In a few stray cases uric acid has been found in the feces, but only in minute quantities.

The research seemed to bring out one point which may modify our views regarding the diet of gouty patients. The thymus sweetbread and the pancreas sweetbread are both known to be rich in purins, the former in adenin and the latter also in adenin, and, to a larger extent, in guanin. Both these glands have been considered injurious for the gouty individual, owing to their richness in these purin or nuclein derivatives. Hall's investigations show that a very large percentage of the adenin of the thymus is not absorbed and is rapidly excreted, and that the guanin of the pancreas is incapable of increasing the urinary purin output and of exerting any injurious effects on the tissues. This is a return to the position of Luff, who, as a result of clinical experience, recommended the use of sweetbread in gout.

Walker Hall finds that the fecal purins show an average daily excretion in the same individual at different intervals and under similar circumstances, the quantity ranging from 0.01 to 0.03 gm. of purin nitrogen on a mixed diet. The addition of medium quantities of meat and hypoxanthin do not alter the normal amount, and they are, therefore, probably fully absorbed. When excessive amounts of meat,